IN THE CLAIMS:

Claims 1-14 (Canceled)

15. (New) Method for hydration of a particulate or pulverulent material containing CaO, the method comprising:

adding water to a particulate or pulverulent material containing CaO, whereing the water is added in a quantity which will ensure that the partial pressure P_{H2O} of the added water as a function of the temperature (°C) is maintained within the interval defined by the formula

$$6{,}85 - \frac{5459}{(T+273)} < \log P_{H_2O} < 5{,}45 - \frac{2032}{(T+273)},$$

where P_{H2O} is the partial pressure of water vapor in atm. and T is the temperature in °C.

16. (New) Method according to claim 15, wherein the material containing CaO as well as the water are introduced into an upper end of a vertical reactor, directed down through the latter subject to simultaneous vaporization and hydration, and that the hydrated product is discharged from the reactor at a lower end thereof.

17. (New) Method according to claim 15, wherein the material containing CaO is introduced into an upper end of a vertical reactor, directed down through the latter subject to simultaneous hydration with water which is introduced at a number of locations distributed across the height of the reactor, where any surplus water in vapour form is discharged through an opening in the upper end of the reactor and wherein the hydrated product is discharged from the reactor from a lower end thereof.

18. (New) Method according to claim 15, wherein the temperature during the hydration process is maintained at a level above 100°C.

19. (New) Method according to claim 16, wherein the temperature during the hydration process is maintained at a level above 100°C.

20. (New) Method according to claim 17, wherein the temperature during the hydration process is maintained at a level above 100ºC.

21. (New) Method according to claim 15, wherein the temperature during the hydration process is maintained at a level above 200ºC.

22. (New) Method according to claim 16, wherein the temperature during the hydration process is maintained at a level above 200ºC.

23. (New) Method according to claim 17, wherein the temperature during the hydration process is maintained at a level above 200ºC.

24. (New) Method according to claim 15, wherein the temperature during the hydration process is maintained at a level above 250ºC.

25. (New) Method according to claim 16, wherein the temperature during the hydration process is maintained at a level above 250ºC.

26. (New) Method according to claim 17, wherein the temperature during the hydration process is maintained at a level above 250ºC.

27. (New) Method according to claim 15, wherein the partial pressure of the water vapour is maintained within the interval 0.01 to 10 atm.

28. (New) Method according to claim 16, wherein the partial pressure of the water vapour is maintained within the interval 0.01 to 10 atm.

29. (New) Method according to claim 17, wherein the partial pressure of the water vapour is maintained within the interval 0.01 to 10 atm.

30. (New) Method according to claim 15, wherein the partial pressure of the water vapour is maintained within the interval 0.1 to 2 atm.

31. (New) Method according to claim 16, wherein the partial pressure of the water vapour is maintained within the interval 0.1 to 2 atm.

32. (New) Method according to claim 17, wherein the partial pressure of the water vapour is maintained within the interval 0.1 to 2 atm.

33. (New) Method according to claim 15, wherein the partial pressure of the water vapour is maintained within the interval 0.9 to 1.1 atm.

34. (New) Method according to claim 16, wherein the partial pressure of the water vapour is maintained within the interval 0.9 to 1.1 atm.

35. (New) Method according to claim 17, wherein the partial pressure of the water vapour is maintained within the interval 0.9 to 1.1 atm.

36. (New) Method according to claims 15, wherein some of the hydrated product is recirculated to a hydration unit.

37. (New) Method according to claims 16, wherein some of the hydrated product is recirculated to a hydration unit.

38. (New) Method according to claims 17, wherein some of the hydrated product is recirculated to a hydration unit.

39. (New) Method according to claim 15, wherein hydration is confined to the surface of the material particles.

40. (New) Method according to claim 39, wherein the degree of hydration is less than 70 %.

41. (New) Method according to claim 39, wherein the degree of hydration is less than 50 %.

42. (New) Method according to claim 15, further comprising extracting the material containing CaO in the form of calcined raw meal from a calciner of a cement manufacturing plant.

43. (New) Method according to claim 42, wherein the hydrated product subsequently is re-introduced into a preheater of the cement manufacturing plant immediately after the location, viewed in the direction of movement of the exhaust gases, where SO_2 is formed in order to absorb SO_2.

44. (New) Apparatus for carrying out a method for hydration of a particulate or pulverulent material containing CaO comprising adding water to a particulate or pulverulent material containing CaO, whereing the water is added in a quantity which will ensure that the partial pressure P_{H2O} of the added water as a function of the temperature (°C) is maintained within the interval defined by the formula

$$6{,}85 - \frac{5459}{(T+273)} < \log P_{H,O} < 5{,}45 - \frac{2032}{(T+273)},$$

where P_{H2O} is the partial pressure of water vapor in atm. and T is the temperature in °C, wherein the apparatus comprises a vertical reactor incorporating an upper end and a lower end, means at the upper end of the reactor for introducing the material containing CaO and water either collectively or separately, and means at the lower end of the reactor for discharging the hydrated product, and wherein during operation of the apparatus the material containing CaO as well as the water are introduced into an upper end of a vertical reactor, directed down through the latter subject to simultaneous vaporization and hydration, and that the hydrated product is discharged from the reactor at a lower end thereof.

45. (New) Apparatus for carrying out a method for hydration of a particulate or pulverulent material containing CaO comprising adding water to a particulate or pulverulent material containing CaO, whereing the water is added in a quantity which will ensure that the partial pressure P_{H2O} of the added water as a function of the temperature (°C) is maintained within the interval defined by the formula

$$6{,}85 - \frac{5459}{(T+273)} < \log P_{H_2O} < 5{,}45 - \frac{2032}{(T+273)},$$

where P_{H2O} is the partial pressure of water vapor in atm. and T is the temperature in °C, wherein the apparatus comprises a vertical reactor incorporating an upper end and a lower end, means at the upper end of the reactor for introducing material containing CaO, means in the upper end of the reactor for discharging any surplus water in vapour form, means provided across the height of the reactor for introducing water into the reactor, and means at the lower end of the reactor for discharging the hydrated product, and wherein during operation of the apparatus the material containing CaO is introduced into an upper end of a vertical reactor, directed down through the latter subject to simultaneous hydration with water which is introduced at a number of locations distributed across the height of the reactor, where any surplus water in vapour form is discharged through an opening in the upper end of the reactor and wherein the hydrated product is discharged from the reactor from a lower end thereof.

46. (New) Product provided by the method according to claim 15.

47. (New) Use of the product provided by the method according claim 15 for reducing the SO2 discharge from a kiln plant.